PROJECT 25 - New Technology Standards

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DEC 29 1997

December 24, 1997

DOCKET FILE COPY ORIGINAL

Secretary, Federal Communications Commission
1919 M Street N.W.
Washington, D. C. 20554

Dear Secretary,

Attached for your review and distribution is Project 25's formal comments on WT Docket 96-86.

Cordially,
Craig M Jorgensen
Craig M. Jorgensen
Co-Chair

cc: Art McDole, Co-Chair
Project 25 Steering Committee

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Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
The Development of Operational,	)	WT Docket No. 96-86
Technical and Spectrum Requirements	)	
For Meeting Federal, State and Local	)	
Public Safety Agency Communication	)	
Requirements Through the Year 2010	)	
	)	
Establishment of Rules and Requirements	)	
For Priority Access Service	)	

Project 25 provides the following comments on those issues in the Docket pertaining to standardizing digital communications and related matters.

DESCRIPTION OF PROJECT 25

Project 25 was established in 1989 for the specific purpose of developing digital communications standards for public safety radio. It is a multiple-phased project that includes a wide range of participants from all facets of the public safety community, including federal, state and local government agencies. In addition, a majority of the two-way radio equipment manufacturers for the public safety community are also active participants. The process is driven by users needs, without bias toward or against any specific manufacturers or their product.

It is recognized by the Project 25 participants that digital standards are an absolute necessity to ensure interoperability, multiple-source procurement and to provide a limited guarantee against premature technology obsolescence. From its inception, one of the Project's primary concerns has been spectrum efficiency, which led to the Project's early development of standards having a maximum bandwidth of 12.5 kHz.

During Phase 1 (the 12.5 kHz standards development process), all participating manufacturers were invited and encouraged to participate with the sole provision that they sign an agreement to release any of their Intellectual Property Rights (IPRs) that they might offer under .fair and reasonable. terms and conditions. To ensure equality, the process was structured around a Steering Committee composed of 11 persons, 3 from Federal Government agencies with national responsibilities, 3 representing State public safety and 3 representing local government public safety. There are two Co--Chairs, one from the Association of Public Safety Communications Officials (APCO) and one from the National Association of State Telecommunications Directors (NASTD). These two organizations also pledged their financial support to the process. The Federal Communications Commission was asked to provide staff to monitor the process, but after one or two meetings, they decided their attendance was not pertinent. It was agreed that a completed suite of standards would be presented to the Commission if and when deemed appropriate. After carefully considering this docket, and the Commission's own comments about standards and their importance to the future, we believe that the time for such a presentation is now.

CURRENT STATE OF THE PROJECT

This process has continued with an estimated input in excess of 750,000 man hours from users and manufacturers. Early in the project, the Telecommunications Industry Association (TIA) offered to participate in the process and help the users develop standards. At that time, it was decided that the APCO Project 25/TIA effort to develop digital, land mobile, wireless radio standards would be based on a Memorandum of Understanding (MOU) between TIA and the APCO Project 25 Steering Committee. Every standard developed in accordance with this MOU is predicated on the users' needs, which are carefully listed in a document known as a Project 25, Statement of Requirements (SOR). Any user, manufacturer, or other interested party can participate in the development of and participate in the voting for or against user needs documents by simply attending the meetings. These document the user requirements and reflect the practical and technical needs of the users in terms that reflect their everyday working environment. They are created by the users, in concert with the manufacturers in an effort to outline in as specific detail as possible the users technology needs and requirements. The SOR in Phase I became the foundation for the Project's 25 and TIA's Phase I technical recommendations and/or standards.

Once the user/manufacturers have finalized the SOR, it is sent to a TIA Ad hoc Project 25 Interface Committee (APIC) for their review, consideration, and action. The APIC operates under the auspices of TIA and is instrumental in the development of the core-technology documents used for future Project 25 technical recommendations and standards. Any user

who regularly participates in APIC meetings has full voting privileges, in accordance with TIA 3 - 2 - 1 voting procedures. Manufacturers who have signed the Project 25 IPR Memorandum of Understanding and who regularly participate in APIC meetings also have full voting privileges, in accordance with TIA's 3 - 2 - 1 voting procedures. Documents and technical recommendations approved in the APIC process are then forwarded to TIA and eventually evolve into TIA (Project 25) interim standards.

Voting on TIA standards is limited to members of TIA who have complied with certain attendance, membership, voting, and TIA policies as established by that organization. This entire process is conducted under the direct control of TIA and its members. When deemed appropriate, TIA interim standards may be sent to ballot for approval as American National Standards Institute standards (ANSI).

Throughout the APCO Project 25 process, TIA's members have been essential to the process and active participants in every Project 25 meeting and TIA's own TR8 standards-formulating subcommittees, work groups, and task groups. In fact, virtually all Project 25 meetings are preceded by several days of TIA meetings that generally include extensive discussion of Project 25-related topics.

In spite of the amount of time required for the process and the many meetings, and the exhaustive exchange of information by various electronic methodologies, the process has successfully completed a suite of Project 25, Phase I (12.5 kHz bandwidth), digital radio

standards. Phase II is well underway and has already notified industry of the technology selected for developing additional standards to allow future migration to a 6.25 kHz bandwidth. Phase II also includes the development of a suite of wide band digital radio standards to accommodate the transmission of high-speed data. This effort, known as Project 34, is widely supported by both manufacturers and users.

Phase I has resulted in an open suite of standards with virtually all of the documents approved as either TIA Telecommunications System Bulletins (TSBs), Interim Standards (ISs), or actual American National Standards Institute (ANSI) Standards. The core document, the Common Air Interface, is currently in the process of comment resolution as a standard. This follows a vote of 19 to 1 in favor of such adoption by eligible voters.

At least six separate manufacturers are either in the process of building Project 25 standard radios or have publicly announced their intention to do so. It is also important to the public safety community that the Federal government has formally recognized the Project 25 Phase I suite of standards as applicable to federal procurement and as meeting their mandated 12.5 kHz bandwidth requirements. The Honorable Mary L. Good, Under Secretary for Technology, United States Department of Commerce, wrote in December of 1996, a letter to James J. Flyzik,[1] Chairperson, Government Information Technology Service Board, (Note Attachment 1) that .In my view, the role of TIA in fostering the development of technical recommendations and the subsequent adoption of Project 25 standards, (Some in the form of

[1] Letter from Mary L. Good, Under Secretary for Technology, United States Department of Commerce to James J. Flyzik, Chairperson, Government Information Technology Services Board, dated December 10, 1997.

Interim Standards and others in the form of Telecommunications System Bulletins) by TIA means that by operation of section 12 (d) of the Act, Federal agencies and departments (in this particular case the Federal Law Enforcement Community) are required by law to use the TIA Project 25 standards to carry out policy objectives and other activities, including procurement, unless such use is inconsistent with applicable law or is otherwise impractical.. Under Secretary Good also noted that .The Project 25 standards are the ongoing product of an open and fair process that the voluntary standards community has fostered between representatives of government, users, and private sector suppliers.. Finally, she concluded that .In many respects, the Project 25 process is a significant model for government agencies to study as the Act[2] is implemented and the Federal Government's reliance on private sector standards grows..

The depth of support for Project 25 was also reported in the results of a recent survey of how public safety agencies intend to spend their capital budgets in the April 1997, issue of Radio Resource magazine. According to the article, 2,500 surveys were mailed to their public safety readers and over 500 responses were received. The survey noted that 60% said they were planning to complete a system upgrade by the year 2000. Of those planning on upgrading their system, 60% said that they intended to specify compliance with Project 25. The survey responses were said to represent all 50 states and the District of Columbia.

Project 25 standards have created interest locally, nationally and on an international level. The project has enjoyed the participation of representatives from Australia, Canada,

[2] Section 12 (d) of the National Technology Transfer and Advancement Act of 1995 (Public Law 104-113)

New Zealand, Sweden, and the United Kingdom, in addition to those from the United States. Due in part to the potential importance of worldwide interoperability, the Project 25 Steering Committee is currently working with such organizations as the European Telecommunication Standards Institute (ETSI) and the Trans/European Trunked Radio (TETRA) standards development group to approve a cooperative agreement which will allow easier access to their standards for inclusion in US standards, wherever this is deemed appropriate.

Interoperability between multiple vendora' subscriber units and multiple vendors' infrastructure has also been another of the Project's primary objectives. The Project 25 suite of standards ensure that users have a common technology platform upon which to build a system. With Project 25, the industry has a standard that has been developed by consensus in open public forums. It is a standard designed to accommodate interoperability between multiple vendors' systems and subscriber units. It's a standard that can be implemented in digital radio equipment operating in different bands and still be provided by multiple vendors. It's a standard where multiple vendor interoperability has been publicly demonstrated during public gatherings, such as the APCO Annual Conference and Exposition in August 1996 at San Antonio, TX, APCO's Conference in Charlotte, NC, in August 1997, and at the Fleet Mobile Comms Conference in Sydney, Australia, in March 1997.

BASIC COMPOSITION OF PROJECT 25 STANDARDS

Phase I standards cover both conventional and trunked radio systems as well. Phase I is a suite of robust standards for digital radios operating in a 12.5 kHz band width. The standards are designed to be fluid and not restrict development of improved technology. They were developed to provide for graceful migration to more efficient technology by requiring backward compatibility to analog modulation. Only those features that require complete compatibility, such as the vocoder, are deemed essential. Many other features have been adopted as standard options to provide a wide choice for users. As stated previously, Project 25 is foremost a process driven by user needs.

There is nothing in the approved Project 25 documents and TIA Project 25 standards and/or any of the Intellectual Property Rights that has been reasonably claimed during the creation of those standards that will stifle competition. At the same time, these standards do not prevent in any way a user from acquiring proprietary equipment which does not comply with the Project 25 standards. Project 25 standards are based on the assumptions that public safety users recognize that when they use nonstandard technologies, they may lose the benefit of improved interoperability and multiple-source procurement. These standards are flexible enough to allow additional opportunities for interoperability as the state-of-the-art progresses. In fact, it is anticipated that some manufacturers will offer dual mode equipment which will incorporate Project 25 Standard compliant operation in addition to modes which allow unique design.

COMMENTS AND RECOMMENDATIONS

(These are referenced to the appropriate paragraphs in the Docket)

Paragraph 17

The Docket seems to indicate that public safety does not use their spectrum efficiently. As noted above, Project 25, initiated in 1989, specified a 12.5 kHz bandwidth to improve spectrum efficiency, preceding the Commission's Refarming proceeding by several years. Project 25 is now engaged in the Phase II design that will develop standards to operate on 6.25 kHz channels, thus ensuring both spectrum efficiency for the future and a graceful migration of systems.

Paragraph 44

The Commission proposes to dedicate a "significant" amount of spectrum solely for interoperability. It is clear the Commission recognizes that without a digital standard there can be no interoperability in the digital mode. There is no other already developed standard for digital land mobile radio meeting the needs of public safety in the United States other than Project 25.

Paragraphs 55-56

The discussion on digital versus analog will ultimately be determined by user requirements, and the ability to efficiently and effectively use the spectrum that users are allocated. Certainly, the major portion of this new spectrum will be devoted to digital voice, as the benefits of this type of technology are evident. As stated earlier, Project 25 envisioned this over seven years ago, and there is strong evidence that the development of this standard has indeed expedited the development of digital communications. As a voluntary organization that represents user interests, Project 25 has found that equipment Manufacturers are very responsive to expressed user needs!

The Commission states .that equipment would have to be built to a not-yet-developed digital standard (i.e. a standard that would require a not-yet-developed digital standard (i.e., a standard that would require the use of a common voice coder, digital modulation scheme, etc..). As these comments illustrate, such a standard already exists - Project 25 standards.

Although Project 25's Phase 1 standards were driven by voice applications, they include extensive capabilities for narrow band, slow speed data. These standard components were specifically written to embody as much standardized design technology as possible to further ensure full backward compatibility with a wide range of data networks now in place. However, even though the standards include narrow band data, we have consistently expressed

our concerns with regard to the potential for voice/data conflicts if we attempt to over utilize the limited capabilities of the narrow band channels.

Paragraph 57 - 60

The Commission requests comments on the need for standardization on digital channels other than voice. Under the same framework as Project 25, a new project (Project 34) has been established to develop standards for digital data and similar technologies, such as video and imaging. The same positive results are anticipated.

Paragraph 96

The Commission "tentatively concludes" that any trunking and technical standards for this (interoperability) spectrum would be set by the Commission at the national level. While many users strongly disagree with trunking of interoperability channels, we note that Project 25, Phase I includes full trunking standards to promote complete interoperability. The issue then becomes whether the Commission will adopt a full suite of already developed user-driven standards or look to stagnate digital system deployment by either not adopting Project 25 standards or by trying to develop some unknown digital solution which does not have the widespread industry and user support that Project 25 has.

Project 25, as stated, has taken an enormous amount of time and effort. It is in place, it satisfies user needs, and manufacturers are today building equipment meeting this standard.

Any effort by the Commission or other organizations to develop a new standard would face a similar time requirement and would require the unnecessary expenditure of limited public and private resources. In light of the fact that the current Project 25, Phase 1 suite of standards embodies over 30 documents and 1,800 pages of comprehensive technical information[3] which meets the needs of most users, it is doubtful any new efforts would receive sufficient support from the many public and private organizations that are already committed to these standards. Each of these public and private groups have made major commitments of both manpower and funds to ensure Project 25 reached a successful conclusion. Any new effort that did not have the level of support, funding and participation that Project 25 has had would be critically and fatally flawed. The need for this spectrum and for interoperability is <u>now</u>. Adoption of the Project 25 standard by the Commission will ensure immediate positive results.

<u>Paragraphs 104 - 107</u>

The Commission recognizes the difficulty in having a standard adopted and that .APCO Project 25 has been involved in a lengthy process to develop such standards for public safety

[3] The document is so large it has been made available on CD ROM, which is the most common method of distribution of standards documents. To assist the Federal Communications Commission in their deliberations, the

in the 800 MHz band, a process that has not been without controversy.. First, the Project 25 standards are not just for 800 MHz. Since its inception, it has been designed as applicable to any portion of the public safety spectrum either presently assigned or under consideration.

And, yes, there has been controversy. The controversy was not generally about the merit of the standard, but rather a reflection of the vested interests of the various manufacturers building public safety communications equipment. The natural evolutionary process of creating standards that are subject to the release of IPRs will result in some controversy. The problem is compounded when a standard could negatively impact a company's potential success in the marketplace. This kind of problem occurred in Project 25, Phase I and there is no reason to believe it would not occur with a new standards effort sponsored by the Commission. In spite of this controversy, Project 25 has proceeded, adopting a Common-Air-Interface and many related standards, such as trunking, encryption, and the other features necessary for interoperability. Therefore, there is no need for the Commission to go through this process again.

The Commission states a preference for the TIA process and this has been the Project 25 methodology almost from inception. In fact, the Commission suggests it .could adopt standards developed by a public safety organization such as APCO Project 25.. As explained in these comments, APCO, in cooperation with NASTD and the Federal government representative, initiated the project and gave it an APCO project name and number. This has resulted in a

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National Communications System is providing as a part of these reply comments, 10 complementary copies of the latest Project 25 CD Rom. The CD's will be delivered to the Commission under aseparate cover.

democratic process under the direction and control of the users, state and local government, federal agencies and the manufacturers. By mutual consent, the word .APCO. has been dropped from the Standard's titles to better reflect the broad composition of the many other participants and the contributions they have made to the development of these standards.

Paragraph 154

The Commission requests comments on the advisability of mandating a single type of technology. Project 25 has never suggested that its standard should be mandated as a single technology standard to the exclusion of others. Project 25 only stipulates that the standard itself should be exclusive. The adoption of multiple digital standards may create unacceptable interoperability results if they are not tied to a common standard like Project 25. This point is important since Project 25 standards can provide multiple-vendor interoperability directly, without the requirement for infrastructure bridges. In most of the public safety interoperability needs, infrastructure bridges are effective only where coverage patterns of disparate systems are congruent, although this condition does not generally occur. Adoption of Project 25 by the Commission as a single standard for interoperability would not result in exclusion of other types of digital or analog modes or .system. standards. It would simply require that to achieve interoperability, equipment would be either dual mode or, through the use of software and hardware design, be capable of directly communicating with Project 25 standard equipment. To ensure compatibility to analog, Project 25 Phase I standards require that a conventional analog mode be included in all subscriber units. The

standard also requires the subscriber unit support the manufacturer of that unit's analog trunking protocols as a standard option.

SUMMARY

This new 24 MHz of virgin spectrum offers a rare opportunity to initiate state-of-the-art equipment which will promote the most efficient use of this spectrum, enhance interoperability, and provide a pathway to the future of public safety communications. It is dependent upon maximizing the use of digital communications. This in turn is dependent upon adopting a single digital standard for interoperability. Obviously, if a standard is adopted for interoperability in this allocation of spectrum, it will also be used for interoperability in other portions of the spectrum in order to ensure full compatibility between various trunked systems. Project 25 standards are inherently transportable across spectrum allocations.[4]

Project 25 standards were developed by manufacturers in accordance with expressed user needs and each standard was completed to the satisfaction of the users. These standards are available today, without any additional expenditures on the part of the users or the Commission. Since they are accepted and in place, the only thing that is required is recognition and adoption by the Commission. With an acute awareness that Congress has mandated a very short time line for the Commission to meet the needs of public safety, the adoption of a Project 25 interoperability mode is most appropriate.

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[4] At the 1996 APCO annual Conference and Exposition in San Antonio TX, Project 25 demonstrated a digital system which supported equipment from multiple vendors operating simultaneously on multiple bands. Cross-

Clearly, the Federal Communications Commissions time lines can be easily met by the adoption of a standard that is complete and one which is designed to meet the requirements of the users in both existing spectrum and in this new spectrum. Adoption of Project 25 standards for digital interoperability will fulfill the stated intent of the proceeding and provide a digital pathway for meeting the requirements of public safety agency communications through the year 2010.

CONCLUSIONS

Therefore, Project 25 requests the Commission to adopt their standard for digital public safety radios for the proposed new spectrum.

Respectfully Submitted

Project 25 Steering Committee

Craig M. Jorgensen

Craig M. Jorgensen, CoChair

Art McDole

Art McDole, CoChair

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coupling across bands without the need to convert back to an analog baseline allowed for true digital communications with no loss in voice quality or features.

UNITED STATES DEPARTMENT OF COMMERCE
The Under Secretary for Technology
Washington, D.C. 20230

DEC 10 1996

Mr. James J. Flyzik
Chairperson, Government Information
Technology Services Board
Department of the Treasury
1425 New York Avenue, NW
Washington, DC 20220

Dear Mr. Flyzik:

This is in response to your letter of December 2, 1996, in which you inquire "as to the status for use by the Federal government" of the so-called "Project 25" suite of standards which were developed under the aegis of the Engineering Committee TR-8 of the Telecommunications Industry Association (TIA) in collaboration with the Association of Public-Safety Communications Officials, International (APCO), the National Association of State Telecommunications Directors (NASTD), and Federal law enforcement agencies. The Project 25 standards have also been adopted by the TIA as Telecommunications Systems Bulletins (TSB) or Interim Standards (IS). As you note, TIA is a voluntary consensus standards organization. The table enclosed with this document identifies those Project 25 standards which have been adopted by TIA.

You particularly ask whether the Project 25 standards are "technical standards" within the meaning of section 12(d) of the National Technology Transfer and Advancement Act of 1995 (the Act)(Public Law 104-113). Section 12(d) requires Federal agencies "to use technical standards that are developed or adopted by voluntary consensus standards bodies" as a means to carry out policy objectives and other activities.

In my view, the role of TIA in fostering the development of technical recommendations and the subsequent adoption of Project 25 standards (some in the form of Interim Standards and others in the form of Telecommunications Systems Bulletins) by TIA means that by operation of section 12(d) of the Act, Federal agencies and departments (in this particular case the Federal Law Enforcement Community) are required by law to use the TIA Project 25 standards to carry out policy objectives and other activities, including procurements, unless such use is inconsistent with applicable law or is otherwise impractical.

Individual agencies, of course, are responsible for reviewing applicable statutes, and finding whether their use is otherwise impractical. From the facts presented in your letter it appears that the requirements of section 12(d) have been met.

By the very nature of the purpose that you describe for TIA's work with APCO, NASTD, and Federal law enforcement agencies to develop Project 25 standards, and the significant interaction of the Federal Law Enforcement Wireless User's Group (FLEWUG) during this effort, there appears to be no question of their use being inconsistent with applicable law.

As also demonstrated by the facts of your letter, there appears to be no question that their use is other than practical. This is also a reflection of the significant interaction of the FLEWUG in the development of the standards, and the underlying policy objectives that inspired this effort originally. Further, experts at the National Institute of Standards and Technology who have studied this matter advise me that the TIA Project 25 standards describe a complete system in sufficient detail that a number of manufacturers have created prototype products, and have been able to interoperate among themselves in tests.

The Project 25 standards are the ongoing product of an open and fair process that the voluntary standards community has fostered between representatives of government users and private sector suppliers. I think that the success of the Project 25 process has in turn greatly facilitated the orderly adoption of the standards by TIA. In many respects, the Project 25 process is a significant model for government agencies to study as the Act is implemented and the Federal Government's reliance on private sector standards grows.

Sincerely,

Mary L. Good

Enclosure

Project 25 - TIA 102-series Standards Status
[as of November 18, 1996]

1. Project 25 System and Standard Definition, TSB102-A, PUBLISHED Nov 1995
2 Common Air Interface (CAI), TSB 102BAAA, PUBLISHED Apr 1994
3 CAI Conformance Testing, TSB 102BAAB-A, PUBLISHED Aug 1995
4 CAI Reserved Values, TSB 102BAAC-A, PUBLISHED Dec 1995
5. CAI Operational Description for Conventional Channels, TSB 102BAAD, PUBLISHED Oct 1994
6. Vocoder Description, IS 102BABA, PUBLISHED Jul 1993
7. Vocoder Mean Opinion Score (MOS) Test, IS 102BABB, PUBLISHED Dec 1995
8. Vocoder Reference Test, IS 102BABC, PUBLISHED Jun 1996
-- Vocoder Selection Process, TSB 102BABD, PUBLISHED May 1996
9. Tranceiver Measurements and Methods, TSB 102CAAA, PUBLISHED Apr 1994
10. Tranceiver Performance Recommendations, TSB 102CAAB, PUBLISHED Aug 1994
11. Trunking Overview, TSB 102AABA, PUBLISHED Apr 1995
12. Link Control Words, TSB 102AABF, PUBLISHED May 1996
13. Telephone Interface Requirements and Definitions (Voice Service), IS 102BADA, PUBLISHED May 1996
14. Data Overview, TSB 102BAEA, PUBLISHED Jul 1995
15. Packet Data Specification, TSB 102BAEB, PUBLISHED Jul 1995
16. Circuit Data Specification, TSB 102BAEC, PUBLISHED Jul 1995
17. Radio Control Protocol Specification, TSB 102BAEE, PUBLISHED Jan 1996
18. Network Management Interface Definition, TSB 102BAFA, PUBLISHED
19. Security Services Overview, TSB 102AAAB, PUBLISHED Jan 1996
20. DES Encryption Protocol, IS 102AAAA, PUBLISHED Apr 1994
21. Over The Air Rekeying (OTAR) Protocol, TSB 102AACA, PUBLISHED Jan 1996

Notes:

(1) IS = TIA Interim Standard
(2) TSB = TIA Telecommunications Systems Bulletin
(3) TIA = Telecommunications Industry Association, a telecommunications industry trade association and an American National Standards Institute (ANSI)-accredited standards making body